

ABSTRACT OF THE DISCLOSURE

A novel aspect of the invention is a structural arrangement to widen a Fabry-Perot gap beyond a 100-micron LC thickness. The widening permits greatly enhanced spectral discrimination (i.e. many more WDM channels) across the device response range, which is expanded to ITU standards by use of a twin etalon configuration. A liquid crystal optical multiplexer according to the present invention is a two-etalon Fabry-Perot laser etched into many (> 100) sub-etalons in a rectangular array. Each sub-etalon is independently tunable and can be coupled to a distinct fiber. Any single sub-etalon or random combination of sub-etalons is free to be tuned to a particular wavelength corresponding to one of the input channels. This allows for any combination of signals (i.e digital video, data and voice) in a signal broadband channel to be switched to any of several receivers. Wavelength division multiplexing (WDM) is used to combine or separate individual types of signals from a single fiber. Phase-matching coatings are used on the materials within the Fabry-Perot gap, thereby enhancing transmission performance of the WDM device.